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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/509,041	09/27/2004	Masayuki Nakamura	4670-0106PUS1	3224
2292	7590	02/28/2006	EXAMINER	
BIRCH STEWART KOLASCH & BIRCH PO BOX 747 FALLS CHURCH, VA 22040-0747			WU, IVES J	
			ART UNIT	PAPER NUMBER
			1713	
DATE MAILED: 02/28/2006				

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>		<b>Applicant(s)</b>	
	10/509,041		NAKAMURA ET AL.	
	<b>Examiner</b>		<b>Art Unit</b>	
	Ives Wu		1713	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 12/19/06.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1,2,4-6,8 and 9,13-18 is/are pending in the application.
- 4a) Of the above claim(s) 13-18 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 10 and 11 is/are allowed.
- 6) ☒ Claim(s) 1,2,4-6,8 and 9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)             | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

### DETAILED ACTION

(1). Applicant's Remarks and Amendments filed on December 19, 2005 has been received and fully acknowledged with the following results.

Claims 3, 7 and 12 are cancelled. Claims 13 – 18 are non-elected.

Claim 1 is amended to incorporate the limitation of dependent claim 3 and 7.

Claim 10 is amended to incorporate the limitation of dependent claim 7 and 12.

The rejections of claims 1, 3, 7 and 10, 12 in the prior Office Action dated September 19, 2005 are withdrawn accordingly.

Claims 10 and 11 are allowable.

The new rejection of Claims 1, 2, 4-6, 8-9 are presented in the succeeding paragraphs.

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

(2). **Claims 1, 2, 4 - 6 and 8 - 9** are rejected under 35 U.S.C. 103(a) as being unpatentable over Oyama et al (US005651995A) in view of Kotsuji et al (WO 01-27199A1) relied on the English Translation Kotsuji et al (US006548604), and further in view of Fujino et al (US004581444).

(3). Oyama et al disclose a nitrile group-containing highly saturated copolymer rubber which is a product obtained by hydrogenating the conjugated diene portion of an unsaturated nitrile-conjugated diene copolymer having Mooney viscosity of 15 to 200 and an iodine value less or equal to 80 (Abstract, line 1-10). The copolymer comprises acrylonitrile with content of 10 to 60 wt%, (Col. 5, line 56-57), a conjugated diene, (Col. 4, line 43-45), an alkylthio group with content at least 0.03 mole, (Col. 6, line 4-5), unsaturated carboxylic acid ester with content 1 to 80 wt%, ethylenically unsaturated carboxylic acid units with content in the range of 0.1 to 15 wt.%, (Col. 13, line 61- Col. 14, line 2). The breadth of the compositional distribution of the unsaturated nitrile is usually not large than 35, (Col. 4, line 30-32). Furthermore, Oyama et al disclose the adhesive composition comprising an aqueous emulsion of the above-mentioned nitrile group-containing highly saturated copolymer rubber and a resorcinol-formaldehyde resin with content in the range of 10 to 180 parts by weight, (Col. 14, line 65 to Col. 15, line 10) used for treating the fibrous material.

(4). As to the  $\alpha,\beta$ -ethylenically unsaturated nitrile monomer unit of 10 to 30 wt% in a latex of nitrile group-containing copolymer in **independent claim 1**, Oyama et al disclose the unsaturated nitrile-conjugated diene copolymer preferably containing 10 to 60 wt% of bound unsaturated nitrile units, Col. 4, line 24-26. As specific examples of the unsaturated nitrile, there can be mentioned acrylonitrile, Col. 4, line 41-42. The acrylonitrile is  $\alpha,\beta$ -ethylenically unsaturated nitrile.

As to the properties of iodine value of 250 or less and a Mooney viscosity ( $ML_{1+4}$ , 100°C) of 10 to 120 in a latex of nitrile group-containing copolymer in **independent claim 1**, Oyama et

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al disclose that the nitrile group-containing highly saturated copolymer rubber has a Mooney viscosity of 15 to 200 and an iodine value not larger than 80, Col. 3, line 63-65.

As to the property of  $\Delta T_g$  of 15 degree C or less between extrapolated glass transition initiation temperature ( $T_{ig}$ ) and extrapolated glass transition end temperature ( $T_{eg}$ ) measured by DSC in **independent claim 1**, furthermore,  $\Delta T_g$  of 14 degree C or less in **dependent claim 2**, in view of substantially identical rubber copolymer composition disclosed by applicant and Oyama et al, it is the examiner's position to believe that the rubber copolymer of Oyama et al would inherently possess the  $\Delta T_g$  of 15 degree C or less, 14 degree C or less between extrapolated glass transition initiation temperature ( $T_{ig}$ ) and extrapolated glass transition end temperature ( $T_{eg}$ ) measured by DSC. Since USPTO does not have proper means to conduct the experiments, the burden now is shifted to the applicants to prove otherwise, *In re Best*, 562 F.2d 1252, 195 USPQ 430 (CCPA 1977); *In re Fitzgerald*, 205 USPQ 594 (CCPA 1980).

As to the compositional distribution breath of each monomer unit in the nitrile group-containing copolymer rubber is 80 wt% or less in the **independent claim 1**, Oyama et al **teach** the breath of compositional distribution of the unsaturated nitrile to be usually not larger than 35, Col. 4, line 27-28.

Oyama et al **do not teach** the breath of the compositional distribution for each monomer units to be 80 wt% or less.

However, Kotsuji et al **teach** in the nitrile group-containing highly saturated copolymer rubber of the patentee's invention, the monomer units (a), (b), (c) and (d) preferably have a compositional distribution breath of not greater than 20 wt%. Col. 4, line 61-65.

The reason of keeping the breath of compositional distribution for each monomer less than 20 wt% is that the  $\Delta T_g$  is liable to become undesirably large if the compositional distribution for each monomer is too large, (Col. 4, line 67 – Col. 5, line 4). If the breath of compositional distribution for each monomer units is less than 20 wt%, it gives a crosslinked rubber product good cold resistance, oil resistance and dynamic properties, (Col. 1, line 53 - Col. 2, line 6).

Therefore, it would have been obvious at time of the invention was made to provide all monomers of nitrile group-containing rubber copolymer with breath of compositional

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distribution less than 20 wt% disclosed by Kotsuji et al, in the nitrile group-containing rubber copolymer of Oyama et al in order to obtain the desired properties of cold, oil resistance as aforementioned.

As to the average particle size of the nitrile group-containing copolymer from 50 to 150  $\mu\text{m}$  in the **independent claim 1**, both Oyama et al and Kotsuji et al **do not teach** the latex particle size to be 50 to 150  $\mu\text{m}$ .

However, Fujino et al **teach** the flocculation of latex particles such as nitrile rubber latex (Col. 3, line 31), After adding the cationic polymer, the latex particles flocculate under the action of the cationic polymer to form rather large coagulates (Col. 6, line 33-36), the coagulates having a large diameter tend to be divided into coagulates having a substantially uniform particle size at a level of from 10 to 100  $\mu\text{m}$ , especially from 20 to 50  $\mu\text{m}$  (Col. 6, line 40-44).

The advantage of using large particle size coagulates of the latex is to get high solid content as large as 70 % of solid (Col. 2, line 49-51) and minimize the cost of energy for drying (Col. 2, line 9 – 13).

Therefore, it would have been obvious at time the invention was made to employ the process of Fujino et al to form large particle size of latex of from 10 to 100  $\mu\text{m}$  for the latex of nitrile group-containing copolymer rubber of Oyama et al in order to obtain the above-mentioned advantage.

As to the limitation of **dependent claim 4**, in view of Kotsuji et al disclosure for the breath of compositional distribution for each monomer to be less than 20 wt% (Col. 4, line 61-65), it meets the limitation of this instant claim.

As to the content of  $\alpha,\beta$ -ethylenically unsaturated nitrile monomer unit in nitrile group-containing copolymer rubber to be 12 to 25 wt% in **dependent claim 5**, Oyama et al disclose the unsaturated nitrile-conjugated diene copolymer preferably containing 10 to 60 wt% of bound unsaturated nitrile units, Col. 4, line 24-26.

As to the iodine value of nitrile group-containing copolymer rubber to be 200 or less in **dependent claim 6**, Oyama et al disclose the nitrile-group containing highly saturated copolymer having an iodine value not larger than 80, Col. 3, line 63-65.

As to the resorcinol/formaldehyde resin in an adhesive treatment solution comprising the latex in **dependent claim 8**, Oyama et al disclose the adhesive composition including the aqueous emulsion of patentee's nitrile group-containing highly saturated copolymer rubber and a resorcinol-formaldehyde resin, Col. 14, line 66 – Col. 15, line 2.

As to the content of resorcinol/formaldehyde resin to be 3 to 60 parts by weight in **dependent claim 9**, Oyama et al disclose the amount of RF in the adhesive composition to be usually in the range of 10 to 180 parts by weight based on 100 parts by weight of the solid content in the aqueous emulsion of the highly saturated copolymer rubber, Col. 15, line 5-9.

#### *Allowable Subject Matter*

(5). **Claims 10 and 11** are allowed.

The following is an examiner's statement of reasons for allowance: The applicant's nitrile group-containing rubber copolymer latex is prepared with water, resorcinol/formaldehyde resin to become an adhesive composition which contains the water to be 1 mass% or less. As to the water content in the adhesive composition of applicant, it overcomes closest prior art of Oyama et al (US005651995A) because the closest prior of Oyama et al neither anticipate by providing the water content overlapped with applicant's disclosure nor rendering obvious in the adhesive composition.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

#### *Response to Arguments*

Applicant's arguments with respect to claim 7 have been considered but are moot in view of the new ground(s) of rejection. At present, claims 1, 2, 4 - 6, 8 - 9 are pending.

***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

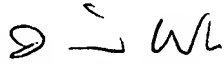
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ives Wu whose telephone number is 571-272-4245. The examiner can normally be reached on 8:00 - 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu can be reached on 571-272-1114. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Examiner: Ives Wu  
Art Unit: 1713  
Date: February 22, 2006

  
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